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Empowering Merdeka Play: Unleashing Potential Through Project-Based Learning in Kindergarten

Andi Agusniatih[1]✉, Nurhayati Nurhayati[2], Durrotunnisa Durrotunnisa[2]
Pendidikan Guru Pendidikan Anak Usia Dini, Universitas Tadulako, Indonesia[(1,2,3)]
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Abstract
This research responds to the limitations of conventional learning methods and minimal educational game tools in stimulating children's interest in learning, this study explores the effectiveness of Project-Based Learning (PjBL) in the implementation of the Merdeka Play curriculum for early childhood education. The research, a descriptive qualitative study, involved 30 children aged 4-6 at Pembina Kindergartens. Through direct observation, interviews, and documentation, the study assessed the development of religious values (80%), self-identity (73%), and literacy/STEAM skills (75%) using the PjBL approach. The overall average achievement across these aspects was 76%. The findings indicating the effectiveness of PjBL, especially through independent play, in facilitating holistic development among young learners. This research contributes insights into enhancing early childhood education with implications for curriculum design and teaching methodologies.

Keywords: *project based-learning; implementation; independent curriculum*

✉ Corresponding author : Andi Agusniatih
Email Address : andiagusniatih@gmail.com (Palu, Indonesia)
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Introduction

The perennial discourse on education continually undergoes transformative reforms, perpetually seeking to enhance quality and optimize systems for the cultivation of knowledgeable, intellectual, and character-driven students. In the pursuit of shaping a golden generation poised for success in the 2045 global landscape, character education takes center stage. Aligned with the principles of the independent learning curriculum, this study delves into the pivotal role of independent learning, emphasizing child-centric methodologies that foster meaningful and enjoyable learning experiences (Wahyuningsih et al., 2023).

In the realm of early childhood education, the concept of fun learning finds resonance in the effectiveness of learning through play, particularly when it culminates in tangible outcomes (Siregar et al., 2022). The independent learning paradigm presents a unique opportunity to elevate the quality of education in Indonesia, especially when initiated at the early childhood education level. A careful implementation of independent learning, as supported by research, holds the promise of instilling 21st-century (Uyun & Diana, 2023).

Project-Based Learning (PjBL) emerges as a transformative model within this paradigm, providing children with collaborative learning experiences that strengthen character and contribute to the synthesis of knowledge. Rooted in the principles of playing while learning, PjBL is an innovative strategy that fosters individual interests, nurtures strengths, and promotes independence (Hasanah et al., 2023).

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The efficacy of PjBL lies not only in its ability to enhance learning outcomes but also in its potential to stimulate various aspects of children's development. Through project learning activities, children are inspired to make meaningful contributions to their environment, fostering cognitive, physical, language, social-emotional, religious-moral, and artistic development (Nurhadiyati et al., 2020) (Sari et al., 2023). As emphasized by Safitri (Dayem et al., 2023), PjBL holds the transformative power to develop essential skills, bolster social behavior, instill confidence, and fuel a heightened desire for learning.

Against the backdrop of technological advancements and the rapid evolution of the 21st century, preparing children to compete becomes paramount. This study, rooted in the transition from the 2013 curriculum to the independent curriculum, positions PjBL as a cornerstone in nurturing children's readiness for subsequent educational levels (Handayani & Sinaga, 2022).

Assessment of children's development in the PjBL framework involves meticulous observation of their activities and project outcomes, with an overarching aim of stimulating conceptual understanding and problem-solving skills (Saleh, 2013);(Crowley et al., 2016). This approach not only enhances cognitive abilities but also cultivates group work skills, motivation, teamwork, and creativity (Ayuningsih et al., 2022).

To understand the nuanced stages of PjBL implementation, this study adopts a structured approach, encompassing stages such as questioning, product plan design, product assessment, and observation-based assessments (Ringotama et al., 2022). The primary objective is to acclimate children to utilize existing knowledge in project learning activities, expressing creativity and imagination while fostering problem-solving abilities (Aisyah et al., 2019).

The urgency of this research is underscored by the persistent challenges facing educators in Donggala Regency kindergartens. Despite the ongoing reforms in education, several critical issues demand immediate attention. Notably, the plural development of children remains below expectations, indicating a need for innovative approaches to address diverse learning needs. Furthermore, the identified gaps in fostering critical and creative thinking, cooperation, and the provision of stimulating projects highlight the imperative for a targeted intervention.

This research positions itself at the intersection of these challenges and opportunities, aiming to bridge the gap between current educational practices and the evolving demands of the future. By delving into the effectiveness of PjBL within the independent curriculum, this study directly addresses the identified issues, offering insights that can inform evidence-based interventions for improved learning activities in kindergartens in Donggala Regency.

Moreover, the research resonates with national and global educational discourse emphasizing the need for learner-centric methodologies. The project approach within PjBL aligns seamlessly with the aspirations of child-centered learning advocated in the independent curriculum. As educational paradigms shift towards fostering independence, creativity, and collaborative skills, this study seeks to contribute not only to the local context but also to the broader conversations on educational innovation and reform.

In essence, the relevance of this research lies in its potential to catalyze transformative change at the grassroots level while contributing to the ongoing dialogue on the future of education. By exploring the nexus between PjBL, the independent curriculum, and the unique challenges faced by Donggala Regency kindergartens, this research aims to offer practical solutions that resonate with the current issues and aspirations of the educational field, both locally and globally.

Methodology

The research employs a qualitative descriptive approach, seeking a nuanced exploration of the Project-Based Learning (PjBL) model's effectiveness within Donggala Regency's kindergarten education. Ethical considerations are prioritized, obtaining necessary

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permissions and ensuring collaboration from TK Pembina Labuan and TK Pembina Wani, where 30 children aged 5-6 serve as primary subjects. The research unfolds systematically, commencing with ethical considerations and obtaining necessary permissions. Subsequently, the study involves direct engagement with the selected kindergartens, ensuring cooperation and consent from educators, parents, and the children themselves.

Materials and tools include a meticulously designed observation rubric capturing aspects of PjBL activities, interview instruments tailored to extract information on student challenges, and documentation serving as a crucial tool for capturing the essence of PBL activities. Data collection employs direct observation, utilizing the established rubric to systematically record nuances of PBL activities. Structured interviews are conducted with educators, parents, and students to gain a nuanced understanding of challenges and perceptions. Additionally, collected documents, such as plans and visual records, are analyzed to provide context and insights into PBL implementation.

Data analysis involves descriptive management, with qualitative data presented through tables and histograms based on observation sheets and assessment rubrics. Percentage calculations, based on the formula proposed by Anas Sujiono (2013: 40), are used to process qualitative data from the child assessment observation sheet, categorizing PBL effectiveness into four criteria: Not Effective (1% - 25%), Less Effective (26% - 50%), Effective (51% - 75%), and Very Effective (76% - 100%).

This comprehensive methodology ensures a rigorous and systematic exploration of the effectiveness of PjBL in stimulating child development in the kindergarten setting. It provides detailed insights and valuable contributions to educational practices, contributing to the ongoing dialogue on innovative learning methodologies in early childhood education.
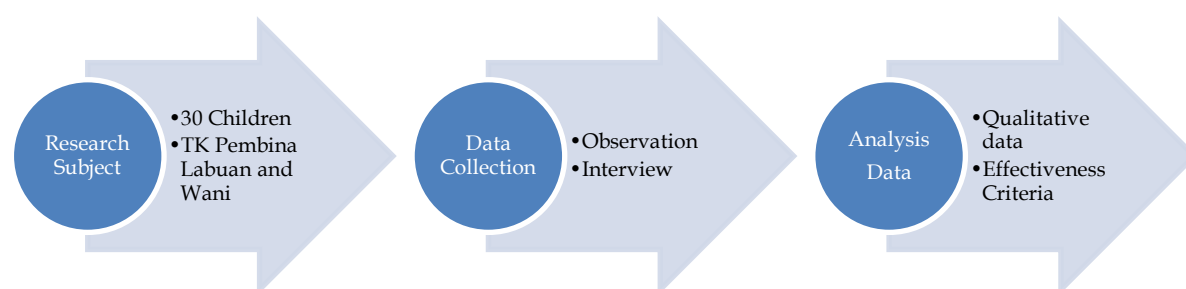
Figure 1. Diagram Methodology Process Research

Result and Discussion

The research conducted at Pembina Kindergarten in Labuan District, Donggala Regency, Central Sulawesi, aimed to evaluate the effectiveness of project-based learning (PjBL) with an independent learning curriculum. The study spanned three weeks and involved 30 students in Class B. The research commenced with an initial phase of observing the children's familiarity with the tools and materials to be used, coupled with an exploration of their curiosity through open-ended questions. This approach was rooted in constructivist theories, emphasizing the importance of engaging students actively in their learning process (Piaget, 2013). By involving the children in the planning stage, the research sought to enhance their interest and ownership of the learning activities, aligning with the principles of student-centered learning (Vygotsky & Cole, 1978).

The learning process utilized a project method, aligning with the principles of project-based learning (Thomas et al., 2015). This method emphasizes hands-on, collaborative projects that address real-world challenges, fostering a deeper understanding of the subject matter. The chosen theme, "my needs," was designed to contextualize the learning experience around the children's environment, enhancing the relevance of the curriculum (Larmer et al., 2015). Teachers guided children through the process of making fruit soup and burger buns, linking

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the project to daily life experiences to promote practical understanding (Ertmer & Simons, 2006). In the concluding stage, trigger questions were employed to assess the children's understanding, a technique often used in formative assessment (Black & Wiliam, 1998).

Figure 2. Burger-making project

The evaluation of learning activities focused on three main aspects: religious values and character development, personal identity development, and literacy and STEAM (Science, Technology, Engineering, Arts, and Mathematics) development. These aspects were chosen to provide a comprehensive analysis of the impact of PJBL on various dimensions of child development (**Table 1**).

In the analysis of religious values and character development, the study revealed significant positive outcomes 80o%. The majority of children demonstrated understanding of their religion, adherence to rules, and empathy towards their peers. This aligns with the findings of researchers (OK et al., 2023) who emphasize the importance of early childhood education in instilling moral and religious values. Project-based learning has proven effective in promoting positive social attitudes such as cooperation, tolerance, and empathy (Junita et al., 2023). This resonates with the broader educational philosophy that views character development as a fundamental goal of schooling (Tazkia et al., 2023).

Regarding personal identity development, the study indicated positive results in terms of responsibility, resilience, and pride in one's work. PJBL was found to be effective in providing opportunities for children to express themselves and engage in engineering activities, contributing to the development of perseverance and creative thinking skills (Sadiah & Lestari, 2020). The findings also align with the notion that children naturally thrive in activities that involve planning, designing, building, and repairing (Selly, P B in (Sadiah & Lestari, 2020).

Table 1. Development of Children Achievements

Aspect	Category	Development	Recapitulation of Children Development
Religious Values and Ethics	Understanding their religion	86%	80 %
	Understand the rules	73%	
	Understand the feelings of friends	80%	
Personal Development of Children	Responsible	80%	74 %
	Resilient	67%	
	Proud of their work	75%	
Literacy and STEAM	Communicate	73%	75 %
	Think critically	67%	
	Show their interests and passions	87%	
Average			76 %

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The analysis of literacy and STEAM development demonstrated positive outcomes in communication skills, critical thinking, and the expression of interests and passions. The integration of STEAM elements in PJBL activities stimulated the exploration of knowledge, problem-solving skills, and creative thinking (Muhammadi, 2023). This resonates with the broader literature, which suggests that STEAM education enhances cognitive, social, emotional, and physical aspects of development (Purwanti & Zulkarnaen, 2023). The combination of STEAM and PJBL was found to be particularly effective in improving children's literacy skills (Dianti et al., 2023).

The recapitulation of child development achievements across the three aspects revealed an average value of 76%, indicating the overall effectiveness of PJBL in fostering holistic development. The 24% less developed category suggests areas where children may still require teacher assistance, demonstrating the need for ongoing support and scaffolding in the learning process (Vygotsky & Cole, 1978).

The effectiveness of PJBL in religious values, character development, personal identity, and literacy and STEAM aligns with various educational theories and contemporary research findings. The emphasis on constructivist principles, student-centered learning, and the integration of real-world experiences contribute to the success of PJBL in promoting multifaceted child development.

The positive outcomes in religious and ethical values development are consistent with the idea that education plays a crucial role in reinforcing moral-religious foundations (Supriyanto, 2015). The findings also support the research indicating that PJBL can contribute to the development of character and moral values in early (Rifmasari et al., 2022). In addition, (Ningrum et al., 2021) also stated in their research that the project-based learning approach can improve social behaviour so that it gives children the opportunity to interact and work together with their friends. The emphasis on environmental care and responsibility in the PJBL activities reflects a broader societal need to instill a sense of stewardship and sustainability from an early age (Junita et al., 2023).

In terms of personal identity development, the positive results align with the understanding that project activities provide a platform for children to express themselves and engage in engineering practices (Sadiah & Lestari, 2020). The findings emphasize the role of PJBL in fostering self-regulation, collaboration, and creative thinking skills, which are essential for personal and social development.

The literacy and STEAM development outcomes resonate with contemporary educational trends emphasizing the importance of STEM (Science, Technology, Engineering, and Mathematics) education enriched with the arts (Muhammadi, 2023). STEAM emphasises children to explore their knowledge by exploring their curiosity to solve the problems they face (Wulandani et al., 2022). The positive impact on problem-solving skills, creativity, and the ability to explore and create aligns with the goals of STEAM-PJBL learning (Triprani et al., 2023). The findings support the notion that integrating elements of Science, Technology, Engineering, Art, and Mathematics in learning activities positively influences cognitive, social, emotional, and physical development (Purwanti & Zulkarnaen, 2023).

STEAM for learning is one of the breakthroughs that aims to foster the ability to create technology-based learning (Amelia & Marini, 2022).In the ability of technology is used to familiarize children to use technology, so that it can help and facilitate in doing something, such as knives, spoons, forks, glasses and so on. Engineering skills, children can process menus that have been processed, children can explore, create new things, try, and redesign. In terms of processing and exploring and creating new things can be related to the scientific development of children as said (Norhikmah & Rini, 2022) in his research the Project Based Learning model and the Experiment method can develop science skills to improve by achieving very good.

The interviews with teachers and parents further reinforced the effectiveness of the PJBL approach. Teachers highlighted the freedom given to children for creative expression, positioning themselves as facilitators, motivators, and innovators—a testament to the shift from traditional teacher-centered approaches (Thomas et al., 2015). Parents expressed satisfaction with the project activities, noting their positive impact on children's skills and habits. This echoes the collaborative nature of PJBL, extending the learning experience beyond the classroom to the home environment (Vygotsky & Cole, 1978).

In conclusion, the research at Pembina Kindergarten in Donggala district supports the effectiveness of project-based learning with an independent curriculum in fostering the holistic development of young children. The positive outcomes in religious values, character development, personal identity, and literacy and STEAM align with educational theories and contemporary research. The findings emphasize the importance of active engagement, real-world relevance, and collaborative learning in promoting multifaceted child development. The research contributes valuable insights to the field of early childhood education, advocating for the continued exploration and implementation of innovative pedagogical approaches that prioritize the holistic development of young learners.

The research holds substantial implications and contributions for the scientific field of early childhood education. The study's foremost contribution lies in advancing pedagogical approaches, particularly through the evident efficacy of project-based learning (PJBL) with an independent curriculum. The positive outcomes across religious values, character development, personal identity, and literacy/STEAM skills highlight PJBL as a transformative tool for educators working with young children. This finding is crucial for shaping future research, policies, and practices within the field.

Moreover, the research aligns seamlessly with constructivist theories, particularly those proposed by Piaget and Vygotsky. The study's emphasis on active engagement, exploration, and collaboration reaffirms the enduring relevance of these theories in early childhood education. It underscores the importance of theoretical frameworks in guiding educational practices and encourages a more nuanced understanding of how young children learn.

Figure 3. Project to make fruit soup

A significant contribution of the study lies in its comprehensive evaluation of child development across multiple domains. By examining religious values, character, identity, and literacy/STEAM holistically, the research provides valuable insights into the multifaceted nature of early childhood development. This holistic perspective is indispensable for educators, policymakers, and researchers in designing interventions and curricula that address the diverse dimensions of children's growth and learning.

The research also sheds light on the practical integration of real-world experiences into the learning environment. The thematic approach of "my needs" and the hands-on activities like making fruit soup and burger buns exemplify how real-world contexts can enhance the educational experience. This finding resonates with the current emphasis on experiential and contextual learning in early childhood education, offering practical insights for educators seeking to enrich their teaching practices.

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Additionally, the positive outcomes in literacy and STEAM development contribute to contemporary educational trends emphasizing STEM and STEAM education. The study demonstrates that integrating these elements into project-based learning positively influences children's cognitive, social, and emotional development. This finding is particularly pertinent in preparing young learners for an increasingly complex and technology-driven world.

The interviews with parents reveal another layer of significance, emphasizing the importance of parental involvement and support. The positive impact of PJBL on children's skills and habits, as reported by parents, underscores the need for educational initiatives that encourage collaboration between educators and parents. This aspect is crucial for extending the learning experience beyond the classroom and highlights the potential role of parents as partners in fostering children's development

Furthermore, the study opens avenues for future research and innovation in the field. Researchers may explore variations in PJBL implementation, assess long-term effects on child development, and investigate potential cultural and contextual factors influencing outcomes. These areas of inquiry can contribute to ongoing efforts to refine and innovate educational practices, ensuring continuous improvement and adaptability.

Lastly, the research holds policy implications for early childhood education. The positive outcomes suggest that project-based learning could be considered a viable approach in early childhood education curricula. Policymakers may find the results valuable in shaping guidelines and frameworks that prioritize holistic development and innovative teaching methodologies for young children.

The research providing valuable insights into project-based learning (PJBL), is subject to certain limitations that warrant consideration. First, the study focused exclusively on Class B with 30 research subjects, potentially limiting the generalizability of findings to a broader population due to the small sample size and specificity of the study group. Additionally, the research spanned a relatively brief period of three weeks, potentially missing the long-term effects of PJBL on child development. A more extended study duration would be advisable to capture sustained impacts. Furthermore, the study concentrated on children aged 4-6 years, potentially restricting the direct applicability of the findings to older age groups or different educational settings. Introducing a broader age range and diverse educational contexts could enhance the study's relevance.

The evaluation of child development aspects relied on subjective observations and trigger questions, lacking more objective measures like standardized tests, which could strengthen the validity of the results. External factors such as socioeconomic background and parental involvement were not extensively explored, and their influence on the effectiveness of PJBL should be considered in future research endeavors.

To address these limitations, it is recommended that future research endeavors consider diversifying the sample by including participants from different kindergarten classes or schools to enhance the generalizability of findings. Conducting longitudinal studies with an extended research duration would provide a more comprehensive understanding of the sustained effects of PJBL on child development over time. Stratifying participants into different age categories could offer a nuanced understanding of how PJBL impacts children's development at various stages of early childhood.

Complementing qualitative observations with quantitative measures, such as standardized assessments, would contribute to a more robust evaluation of child development. Additionally, future research should incorporate in-depth contextual analyses to explore how external variables, such as socioeconomic background and parental involvement, may influence the effectiveness of PJBL in diverse settings. By addressing these recommendations, future research can build upon the current study's foundation and provide a more comprehensive understanding of the impact of PJBL on child development, while accounting for potential limitations.

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Conclusion

The Project-Based Learning (PJBL) method represents an immersive educational approach designed to connect children with the real world. It goes beyond mere understanding by actively engaging children in practical activities that relate to the assigned tasks. In this method, children are not passive recipients but are invited to become central participants in the learning process. This approach prioritizes the child, fostering an environment where they can be both active and creative, exploring, playing, and gaining new knowledge and experiences that significantly contribute to their overall development. Aligned with the principles of an independent play curriculum, PJBL emphasizes the process over results, allowing students to learn in harmony with their unique talents and interests. The learning atmosphere becomes more enjoyable, granting children the freedom to express their creativity. This method encourages a proactive role for children, promoting critical thinking and independence, thus cultivating their creativity and innovation. The impressive 76% average value of child development achievement in PJBL activities serves as a conclusive testament to the method's efficacy. In summary, the integration of project-based learning with an independent curriculum proves highly effective in kindergarten learning activities, providing a dynamic and engaging platform for children's holistic development.

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References

Aisyah, H. A., Paridah, M. T., Sapuan, S. M., Khalina, A., Berkalp, O. B., Lee, S. H., Lee, C. H., Nurazzi, N. M., Ramli, N., Wahab, M. S., & others. (2019). Thermal properties of woven kenaf/carbon fibre-reinforced epoxy hybrid composite panels. *International Journal of Polymer Science*, *2019*, 1–8. https://www.hindawi.com/journals/ijps/2019/5258621

Amalina, A. (2020). Pembelajaran Matematika Anak Usia Dini di Masa Pandemi COVID-19 Tahun 2020. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *5*(1), 538–548. https://doi.org/10.31004/obsesi.v5i1.592

Amelia, W., & Marini, A. (2022). Urgensi Model Pembelajaran Science, Technology, Engineering, Arts, and Math (STEAM) untuk Siswa Sekolah Dasar. *Jurnal Cakrawala Pendas*, *8*(1), 291–298. https://ejournal.unma.ac.id/index.php/cp/article/view/1947

Anizal, D. R., & Hartati, S. (2022). Penerapan Pembelajaran Berbasis STEAM (Science, Technology, Engineering, Art \& Math) di Taman Kanak-Kanak Hang Tuah Padang. *Jurnal Ilmiah Pesona PAUD*, *9*(1), 33–45. https://ejournal.unp.ac.id/index.php/paud/article/view/116776

Arsy, I., & Syamsulrizal, S. (2021). Pengaruh Pembelajaran STEAM (Science, Technology, Engineering, Arts, and Mathematics) Terhadap Kreativitas Peserta Didik. *Biolearning Journal*, *8*(1), 24–26. https://unimuda.e-journal.id/jurnalbiolearning/article/view/1019

Ayuningsih, F., Malikah, S., Nugroho, M. R., Winarti, W., Murtiyasa, B., & Sumardi, S. (2022). Pembelajaran Matematika Polinomial Berbasis STEAM PjBL Menumbuhkan Kreativitas Peserta Didik. *Jurnal Basicedu*, *6*(5), 8175–8187. https://jbasic.org/index.php/basicedu/article/view/3660

Black, P., & Wiliam, D. (1998). Assessment and classroom learning. *Assessment in Education: Principles, Policy \& Practice*, *5*(1), 7–74.

Boaler, J. (2002). Learning from teaching: Exploring the relationship between reform curriculum and equity. *Journal for Research in Mathematics Education*, *33*(4), 239–258. https://www.jstor.org/stable/749740

Crowley, L. C., Marfell, B. J., Scott, A. P., & Waterhouse, N. J. (2016). Quantitation of apoptosis and necrosis by annexin V binding, propidium iodide uptake, and flow cytometry. *Cold Spring Harb Protoc*, *2016*(11), 953–957. https://pubmed.ncbi.nlm.nih.gov/27803250

Dayem, D., Sulastri, S., & Handayani, I. N. (2023). Pengaruh Project Based Learning terhadap Kemampuan Mengenal Bentuk Geometri Anak Usia 5-6 Tahun. *Journal on Teacher Education*, *4*(3), 816–824. https://journal.universitaspahlawan.ac.id/index.php/jote/article/view/13385

Dianti, S. A. T., Pamelasari, S. D., & Hardianti, R. D. (2023). Penerapan Pembelajaran Berbasis Proyek Dengan Pendekatan Stem Terhadap Peningkatan Kemampuan Literasi Sains Siswa. *Proceeding Seminar Nasional IPA*. https://proceeding.unnes.ac.id/index.php/snipa/article/view/2325

Ertmer, P. A., & Simons, K. D. (2006). Jumping the PBL implementation hurdle: Supporting the efforts of K--12 teachers. *Interdisciplinary Journal of Problem-Based Learning*, *1*(1), 40–54. https://docs.lib.purdue.edu/ijpbl/vol1/iss1/5

Fauziah, N., Ichsan, I., & Irbah, A. N. (2022). Pengaruh Model Pembelajaran Steam Berbasis Loose Part Terhadap Kemandirian Anak Usia Dini. *Jurnal PG-PAUD Trunojoyo: Jurnal Pendidikan Dan Pembelajaran Anak Usia Dini*, *9*(2), 18–27. https://journal.trunojoyo.ac.id/pgpaudtrunojoyo/article/view/14746

Handayani, A., & Sinaga, S. I. (2022). Penerapan Model Project Based Learning dalam Meningkatkan Kemampuan Berpikir Kritis Anak Usia Dini. *PAUD Lectura: Jurnal Pendidikan Anak Usia Dini*, *6*(01), 146–154. https://journal.unilak.ac.id/index.php/paud-lectura/article/view/10670

Hasanah, R., Katoningsih, S., & Akun, J. C. A. (2023). Pengaruh Pembelajaran Project Based Learning terhadap Kecerdasan Visual Spasial Anak Usia 5-6 Tahun. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *7*(2), 1923–1933. https://doi.org/10.31004/obsesi.v7i2.3929

Hasni, U., & Amanda, R. S. (2022). Pengembangan Model Pembelajaran Project Based Learning Untuk Meningkatkan Kemampuan Geometri Anak Usia 5-6 Tahun. *Jurnal PG-PAUD Trunojoyo: Jurnal Pendidikan Dan Pembelajaran Anak Usia Dini*, *9*(1), 1–11. https://journal.trunojoyo.ac.id/pgpaudtrunojoyo/article/view/13537

Hastuti, H., & Mulyono, R. (2023). Projek Based Learning dan Media Loose Parts dalam Melejitkan Kemampuan Literasi Steam pada Anak Usia Dini. *Syntax Literate; Jurnal Ilmiah Indonesia*, *8*(8), 5740–5752. https://jurnal.syntaxliterate.co.id/index.php/syntax-literate/article/view/12190

Junita, E. R., Karolina, A., & Idris, M. (2023). Implementasi Model Pembelajaran Project Based Learning (Pjbl) Dalam Membentuk Sikap Sosial Peserta Didik Pendidikan Agama Islam Di Sd Negeri 02 Rejang Lebong. *Jurnal Literasiologi*, *9*(4). http://e-theses.iaincurup.ac.id/4602

Khodijah, S., & Mulyaningsih, T. (2023). Penggunaan Pendekatan Steam (Science, Technology, Engineering, Art, And Mathematics) Terhadap Kecerdasan Logika Matematika Anak Di Tk Labschool Stai Bani Saleh Kota Bekasi. *Wildan: Jurnal Pendidikan Dan Pengajaran-STAI Bani Saleh*, *2*(1), 10–26. https://e-journal.staibanisaleh.ac.id/index.php/wildan/article/view/17

Larmer, J., Mergendoller, J. R., & Boss, S. (2015). Gold standard PBL: Essential project design elements. *Buck Institute for Education*, 1–4. https://www.pblworks.org/what-is-pbl/gold-standard-project-design

Maulidah, E., & Abdillah, F. (2023). Project Based Learning: Development Of Early Childhood

Abilities. *International Conference on Humanity Education and Society (ICHES)*, *2*(1). https://proceedingsiches.com/index.php/ojs/article/view/26

Muhammadi, M. (2023). Penerapan Media Poster Berbasis STEAM dalam Meningkatkan Kemampuan Berpikir Siswa UPT TK Pembina 01 Pancung Soal. *MUKADIMAH: Jurnal Pendidikan, Sejarah, Dan Ilmu-Ilmu Sosial*, *7*(2), 309–315. https://jurnal.uisu.ac.id/index.php/mkd/article/view/7532

Ningrum, F. S., Safrina, R., & Sumadi, T. (2021). Peran Pembelajaran Musik melalui Project Based Learning terhadap Perilaku Sosial Anak Usia 5-6 Tahun. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *6*(2), 704–718. https://doi.org/10.31004/obsesi.v6i2.1559

Norhikmah, N., & Rini, T. P. W. (2022). Mengembangkan Kemampuan Sains Anak Dengan Menggunakan Model Project Based Learning Dan Metode Eksperimen. *Jurnal Inovasi, Kreatifitas Anak Usia Dini (JIKAD)*, *2*(3), 10–20. https://ppjp.ulm.ac.id/journals/index.php/jikad/article/view/6996

Nugraha, I. R. R., Supriadi, U., & Firmansyah, M. I. (2023). Efektivitas Strategi Pembelajaran Project Based Learning dalam Meningkatkan Kreativitas Siswa. *Jurnal Penelitian Dan Pendidikan IPS*, *17*(1), 39–47. https://ejournal.unikama.ac.id/index.php/JPPI/article/view/8608

Nurhadiyati, A., Rusdinal, R., & Fitria, Y. (2020). Pengaruh model project based learning (pjbl) terhadap hasil belajar siswa di sekolah dasar. *Jurnal Basicedu*, *5*(1), 327–333. https://jbasic.org/index.php/basicedu/article/view/684

Nurhayani, N., & Nurhafizah, N. (2022). Media dan Metode Pengembangan Literasi Anak Usia Dini di Kuttab Al Huffazh Payakumbuh. *Jurnal Basicedu*, *6*(6), 9333–9343. https://jbasic.org/index.php/basicedu/article/view/3598

OK, A. H., Al-Farabi, M., & Sanjaya, I. (2023). Implementasi Pembelajaran Berbasis Projek dalam Pembentukan Karakter Siswa SD IT Sekabupaten Aceh Tenggara. *FIKROTUNA: Jurnal Pendidikan Dan Manajemen Islam*, *17*(01). https://ejournal.kopertais4.or.id/madura/index.php/fikrotuna/article/view/6786

Pearlman, M. R., Haas, Z. J., Sholander, P., & Tabrizi, S. S. (2000). On the impact of alternate path routing for load balancing in mobile ad hoc networks. *2000 First Annual Workshop on Mobile and Ad Hoc Networking and Computing. MobiHOC (Cat. No. 00EX444)*, 3–10. https://ieeexplore.ieee.org/document/869207

Piaget, J. (2013). *The construction of reality in the child* (Vol. 82). Routledge.

Pramudyani, A. V. R., & Indratno, T. K. (2022). Pemahaman Science, Technology, Engineering, Art dan Mathematic (STEAM) pada Calon Guru PAUD. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *6*(5), 4077–4088. https://doi.org/10.31004/obsesi.v6i5.2261

Purwanti, P., & Zulkarnaen, Z. (2023). Media Pembelajaran Berbahan Loose Part Berbasis STEAM Dapat Membangun Merdeka Belajar Pada Anak Usia Dini. *Pedagogi: Jurnal Ilmu Pendidikan*, *23*(1), 38–47. http://pedagogi.ppj.unp.ac.id/index.php/pedagogi/article/view/1469

Putri, A. A. P., Halida, H., Rahardjo, B., & Fauzi, C. (n.d.). Pengaruh Model Problem Based Learning terhadap Kemampuan Mengenal Bentuk Geometri Anak Usia Dini. *Jurnal Visi Ilmu Pendidikan*, *15*(2), 204–212. https://jurnal.untan.ac.id/index.php/jvip/article/view/60167

Putri, S. U., & Taqiudin, A. A. (2021). Steam-PBL: Strategi Pengembangan Kemampuan Memecahkan Masalah Anak Usia Dini. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *6*(2), 856–867. https://doi.org/10.31004/obsesi.v6i2.1270

Rifmasari, Y., Sukandar, W., & Sisrian, E. R. (2022). Implementasi Project Based Learning Dalam Menanamkan Nilai Karakter Anak Usia Dini di TK Fadhilah Amal 5 Kota Padang. *Jurnal Usia Dini*, *8*(1), 45–57. https://jurnal.unimed.ac.id/2012/index.php/jud/article/view/36262

Ringotama, A. A., Setyaningsih, E., & Handayani, E. I. P. (2022). Preservice Teachers' Perception on the Implementation of Online Project-Based Learning. *Journal of*

Languages and Language Teaching, *10*(4), 469–482. https://e-journal.undikma.ac.id/index.php/jollt/article/view/5621

Rizkasari, E., Rahman, I. H., & Aji, P. T. (2022). Penerapan Model Pembelajaran Project Based Learning untuk Meningkatkan Hasil Belajar dan Kreativitas Peserta Didik. *Jurnal Pendidikan Tambusai*, *6*(2), 14514–14520. https://jptam.org/index.php/jptam/article/view/4726

Sadiah, N. H., & Lestari, R. H. (2020). Upaya meningkatkan pengetahuan sains pada anak usia dini melalui pembelajaran steam. *CERIA (Cerdas Energik Responsif Inovatif Adaptif)*, *3*(3), 237–244. https://journal.ikipsiliwangi.ac.id/index.php/ceria/article/view/4143

Saida, N. (2021). Pemahaman Konsep Geometri AUD Pada Pembelajaran Berbasis STEAM. *Jurnal PG PAUD Trunojoyo*, *8*(1), 1–7. https://journal.trunojoyo.ac.id/pgpaudtrunojoyo/article/view/9782

Saleh, M. S. M. (2013). Meningkatkan Pemahaman Siswa Tentang Konsep Pecahan Melalui Benda Manipulatif. *JURNAL SERAMBI ILMU*, *14*(2), 119–124. http://ojs.serambimekkah.ac.id/serambi-ilmu/article/view/544

Sari, A. M., Suryana, D., Bentri, A., & Ridwan, R. (2023). Efektifitas Model Project Based Learning (PjBL) dalam Implementasi Kurikulum Merdeka di Taman Kanak-Kanak. *Jurnal Basicedu*, *7*(1), 432–440. https://jbasic.org/index.php/basicedu/article/view/4390

Septiani, I., & Kasih, D. (2021). Implementasi metode STEAM terhadap kemandirian anak usia 5-6 tahun di paud alpha omega school. *Jurnal Jendela Pendidikan*, *1*(04), 192–199. https://ejournal.jendelaedukasi.id/index.php/JJP/article/view/44

Setiawan, T., Sumilat, J. M., Paruntu, N. M., & Monigir, N. N. (2022). Analisis Penerapan Model Pembelajaran Project Based Learning dan Problem Based Learning pada Peserta Didik Sekolah Dasar. *Jurnal Basicedu*, *6*(6), 9736–9744. https://jbasic.org/index.php/basicedu/article/view/4161

Siregar, D. M., Simatupang, E. M., Harahap, T. A. H., Yus, A., & Simaremare, A. (2022). Analisis Efektifitas Model Belajar Bermain Berbasis Proyek Tema Lingkunganku Pendidikan Anak Usia Dini. *Journal of Social Interactions and Humanities*, *1*(1), 27–36. https://journal.formosapublisher.org/index.php/jsih/article/view/453

Sriyanto, A., Muchlisin, M. A., & Dewi, K. (2022). Model Project Based Learning (Pjbl) Untuk Meningkatkan Motorik Halus Anak Tk B Aisyiyah Pandean Kab. Ngawi. *Jurnal Pendidikan Guru Pendidikan Anak Usia Dini*, *2*(2), 11–19. https://www.jurnal.pelitabangsa.ac.id/index.php/JPAUD/article/view/1565

Suminar, U., Saabighoot, Y. A., Mashudi, E. A., Rumanta, M., & Meilya, I. R. (2022). Pengembangan Model Pembelajaran Berbasis Proyek (Project Based Learning) Untuk Meningkatkan Sikap Peduli Lingkungan Pada Anak Usia Dini. *Jurnal Ilmiah Wahana Pendidikan*, *8*(22), 540–554. https://jurnal.peneliti.net/index.php/JIWP/article/view/2943

Supriyanto, D. (2015). Perkembangan Nilai Agama dan Moral Anak dan Pendidikan Keagamaan Orangtua. *MODELING: Jurnal Program Studi PGMI*, *2*(2), 66–75. https://jurnal.stitnualhikmah.ac.id/index.php/modeling/article/view/67

Tazkia, A. H., Hakim, A., & others. (2023). Implementasi Kurikulum Merdeka Belajar dalam Meningkatkan Jati Diri Anak Usia Dini di TK Persis Tarogong Garut. *Bandung Conference Series: Early Childhood Teacher Education*, *3*(1). https://proceedings.unisba.ac.id/index.php/BCSECTE/article/view/9263

Thomas, J., Condliffe, B., & Quint, J. (2015). Whatever Form a Project Takes , It Must Meet These Criteria To Be Gold Standard Pbl . *Interdisciplinary Journal of Problem-Based Learning*, *22*(1), 1–18.

Triprani, E. K., Sulistyani, N., & Aini, D. F. N. (2023). Implementasi Pembelajaran STEAM Berbasis PjBL Terhadap Kemampuan Problem Solving pada Materi Energi Alternatif di SD. *Scholaria: Jurnal Pendidikan Dan Kebudayaan*, *2*, 176–187.

https://ejournal.uksw.edu/scholaria/article/view/8537

Uyun, H. A., & Diana, D. (2023). Implementasi Kegiatan Project-based Learning Menggunakan Media Loose Parts pada Anak Usia 5-6 Tahun. *PAUDIA: Jurnal Penelitian Dalam Bidang Pendidikan Anak Usia Dini*, *12*(2), 240–258. https://journal.upgris.ac.id/index.php/paudia/article/view/paudia.v12i2.16510

Vygotsky, L. S., & Cole, M. (1978). *Mind in society: Development of higher psychological processes*. Harvard university press.

Wahyuningsih, S., Rasmani, U. E. E., Winarji, B., Jumiatmoko, J., Zuhro, N. S., Fitrianingtyas, A., & Nurjanah, N. E. (2023). Pembelajaran Metode Proyek Kurikulum Merdeka Sebagai Strategi Pembentukan Kemandirian Anak. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *7*(4), 4731–4740. https://doi.org/10.31004/obsesi.v7i4.4785

Wulandani, C., Putri, M. A., Pratiwi, R. I., & Sulong, K. (2022). Implementing project-based steam instructional approach in early childhood education in 5.0 industrial revolution era. *Indonesian Journal of Early Childhood Educational Research (IJECER)*, *1*(1), 29–37. https://ojs.iainbatusangkar.ac.id/ojs/index.php/ijecer/article/view/5819

Wulandari, N. T., Mulyana, E. H., & Lidinillah, D. A. M. (2020). Analisis Unsur Art Pada Pembelajaran Steam Untuk Anak Usia Dini. *JPG: Jurnal Pendidikan Guru*, *1*(3), 135–141. https://ejournal.uika-bogor.ac.id/index.php/jpg/article/view/3284